

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1. (Currently Amended): A roller screw comprising:

a screw shaft formed, on an outer peripheral surface thereof, with a spiral roller rolling groove having a V-shape in section;

a nut member formed, on an inner peripheral surface thereof, with a spiral loaded roller rolling groove having a V-shape in section opposing to the V-shaped roller rolling groove of the screw shaft; and

a ~~number~~ plurality of rollers disposed between the roller rolling groove and the loaded roller rolling groove, wherein

~~a number~~ the plurality of rollers include a α group roller ~~group~~ (~~α group~~) bearing the load in axial ~~[[one]]~~ direction of the screw shaft and a β group roller ~~group~~ (~~β group~~) arranged in cross shape to be perpendicular to the axis of the α group roller in a roller advancing direction and adapted to bear the load in ~~[[an]]~~ a direction opposing to the axial ~~[[one]]~~ direction of the screw shaft, ~~[[and]]~~

each of the ~~number~~ plurality of rollers has a diameter larger than a distance between a wall surface of the roller rolling groove and a wall surface of the loaded roller rolling groove which opposes to the ~~above-mentioned~~ wall surface of the roller rolling groove, and

the loads applied to the nut member from the plurality of rollers act in repulsing directions to each other for the α group roller and β group roller.

2. (Currently Amended): A roller screw comprising:

a screw shaft formed, on an outer peripheral surface thereof, with a spiral roller rolling groove having a V-shape in section;

a nut member formed, on an inner peripheral surface thereof, with a spiral loaded roller rolling groove having a V-shape in section opposing to the V-shaped roller rolling groove of the screw shaft;
and

a ~~number~~ plurality of rollers disposed between the roller rolling groove and the loaded roller rolling groove, wherein

the loaded roller rolling groove of the nut member includes a central groove section having a pitch larger than a pitch of the screw shaft and a pair of end groove sections disposed on both sides of the central groove section and having a pitch equal to the pitch of the screw shaft,

in each of the end groove sections, the plurality of rollers are arranged so that the axes of the rollers are directed in the same direction as viewed from the roller advancing direction,

in order to bear the preloads in the opposing directions, the α group roller in one of the end groove sections are arranged so that the axes thereof are perpendicular to the axes of the β group roller in the other one of the end groove sections as viewed in the roller advancing direction, and

the loads applied to the nut member from the plurality of rollers act in repulsing directions to each other for the α group roller and β group roller.

3. (Currently Amended): A roller screw comprising:

a screw shaft formed, on an outer peripheral surface thereof, with a spiral roller rolling groove

having a V-shape in section;

a nut member formed, on an inner peripheral surface thereof, with a spiral loaded roller rolling groove having a V-shape in section opposing to the V-shaped roller rolling groove of the screw shaft; and

a ~~number~~ plurality of rollers disposed between the roller rolling groove and the loaded roller rolling groove, wherein

the nut member is divided in an axial direction into a first nut piece and a second nut piece, and a shim is disposed between the first and second nut pieces so as to apply compression loads to the rollers for the first nut piece disposed in the first nut piece and to the rollers for the second nut piece disposed in the second nut piece, and

in each of the first nut piece and a second nut piece, the plurality of rollers are arranged so that the axes of the rollers are directed in the same direction as viewed from the roller advancing direction,
and

in order to bear the preloads in the opposing directions, the α group roller in one of the first nut piece and the second nut piece are arranged so that the axes thereof are perpendicular to the axes of the β group roller in the other one of the first nut piece and the second nut piece as viewed in the roller advancing direction, and

the loads applied to the nut member from the plurality of rollers act in repulsing directions to each other from the α group roller and β group roller.